

Notice of Allowability

Application No.

10/661,106

Examiner

Martin Lerner

Applicant(s)

BEAUFAYS ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to ____.
2. ☒ The allowed claim(s) is/are 1 to 31.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date ____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date ____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other ____. |

EXAMINER'S AMENDMENT

1. An Examiner's Amendment to the record appears below. Should the changes and/or additions be unacceptable to Applicants, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The application has been amended as follows:

The Examiner's Amendment makes a minor editorial change by updating the serial numbers of the related patent applications at the beginning of the Specification.

On Page 1, following the title, substitute the first three paragraphs as follows:

The following related patent applications filed on the same day herewith are hereby incorporated by reference in their entirety for all purposes:

U.S. Patent Application No. 10/661,431, filed 12 September 2003, (Attorney Docket No. 017101-000700US), titled "Method for Learning Linguistically Valid Word Pronunciations from Acoustic Data," of Francoise Beaufays et al.;

and U.S. Patent Application No. 10/660,868, filed 12 September 2003, (Attorney Docket No. 017101-000900US), titled "Method for Learning Linguistically Valid Word Pronunciations from Acoustic Data," of Francoise Beaufays et al.

REASONS FOR ALLOWANCE

2. The following is an examiner's statement of reasons for allowance:

Regarding independent claims 1, 17 and 26, the prior art of record does not disclose or reasonably suggest at least the limitations of generating a set of alternate pronunciations of a word, wherein the set of alternate pronunciations include a highest scoring set of initial pronunciations with a highest-scoring substitute phone substituted for a lowest-probability phone.

Fanty and *Roth et al.* disclose the closest prior art of record, but at least omit the limitation of substituting for a lowest-probability phone to generate an alternate pronunciation. *Fanty* creates one or more alternate pronunciations in a pronunciation dictionary by substitution of one pattern of phonemes for another pattern of phonemes for speech recognition. An example is the word "Microsoft", having alternate pronunciations "MIKE-ROW-SOFT" and "MIKE-RUH-SOFT", where an "O" sound may be articulated as an "UH" sound, so that one pattern instructs the speech recognition system that, for every vowel, a schwa should be substituted as an alternate pronunciation. (Column 6, Lines 42 to Column 7, Line 17; Column 8, Line 26 to Column 9, Line 38: Figures 3A and 3B) Still, *Fanty* discloses finding a highest scoring path to obtain a sample pronunciation to be modified with alternate pronunciations, but does not determine a lowest-probability phone for substitution. Similarly, *Roth et al.* discloses generating alternate pronunciations given an initial pronunciation by searching a neighborhood of pronunciations about an initial pronunciation, and selecting highest

scoring pronunciations within the neighborhood of pronunciations. The neighborhood includes pronunciations that differ by some limited number of speech sub-units.

Changing an initial pronunciation by one phoneme generates one or more potential alternative pronunciations, and a score is associated with each of the initial and alternative pronunciations. (¶[0009] - ¶[0014]) The speech recognizer updates a lexicon with a new pronunciation if the score of the pronunciation is greater than the score of the initial pronunciation, and the highest scoring phonetic representation is added to the lexicon so that both pronunciations are included. (¶[0024] - ¶[0026]; ¶[0033]) However, *Roth et al.* does not disclose or reasonably suggest changing a phoneme only for a lowest-probability phone. Moreover, *Roth et al.* may not be prior art for the current application, as reliance upon the filing date of 11 September 2003 for Provisional Application 60/502,084 is required to meet Applicants' filing date of 12 September 2003, and the provisional application does not clearly disclose all of the subject matter of the patent.

Applicants' method and system discloses generating phone probabilities for each of the phones in a set of initial pronunciations, and then comparing phone probabilities to determine a phone probability with a lowest value. Then, a phone having a highest-probability is substituted for a lowest-probability phone to generate sets of alternate pronunciations. (Page 11, Line 20 to Page 12, Line 26: Figure 5: Steps 410 and 415) Applicants' Specification, Page 2, Line 20 to Page 3, Line 3, suggests an advantage of providing automated generation of alternate pronunciations instead of relatively costly and slow correction of pronunciations by a trained linguist. Additionally, one skilled in

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the art would understand that an advantage is obtained even over any automated generation of alternate pronunciations as taught by *Fanty* and *Roth et al.*, as a smaller set of alternate pronunciations is generated from only lowest-probability phonemes in a word, and that is more likely to be accurate than changing every phoneme, or by substitution of phonemes according to a pattern definition or rule.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (571) 272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ML
4/18/07



Martin Lerner
Examiner
Group Art Unit 2626

MARTIN LERNER
PRIMARY EXAMINER